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Mark-up Rate Fluctuations in the Business Cycle: A Kaleckian View (2)*

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[*Abstract*]

This is an empirical research followed on my methodological paper (1999), in which we tried to explain actual mark-up rate fluctuations theoretically. Our model supported procyclical fluctuations of the mark-up rate. Here we calculated five kinds of mark-up rate for Japan and the United States for 1970-98, and the United Kingdom for 1970-96, respectively. Then we made a regression analysis on the mark-up rates. It turned out that actual mark-up rates showed more or less procyclical fluctuations and our regression results confirmed the procyclical movements. This analysis has the limitations of the macro-economic analysis and the three advanced countries for the period from 1970 to 1998. But this may give some hint to clear up the long-pending question (since Kalecki and Harrod) whether the degree of monopoly (the mark-up rate in our context) fluctuates procyclically or counter-

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Key words: mark-up rate, business cycle, Kaleckian view.

cyclically. We also found a surprisingly strong similarity in the mark-up rate level, which remained a topic for future research, as well as formulating a mark up rate function.

1. Introduction

This is an empirical research followed on my methodological paper (1999) of the same title. Actual mark-up rates seem to fluctuate in the business cycle whatever pricing procedure is taken, between a Kalecki type, the full cost principle, and others.[1] In the paper, we presented a simple mark-up pricing equation by market type: competitive, oligopolistic, and restricted markets. We considered that the respective price reflected the operating rate of capacity and the change of demand in the real world. We explained these prices by mark-up rates in one way or another, arguing on the movement of these mark-up rates in the business cycle. Our theoretical reasoning (model) suggested the procyclical fluctuations of the mark-up rate.

To see the facts in the real world, we here calculate five kinds of mark-up rate for Japan and the United States for the years 1970-98, and the United Kingdom for the years 1970-96, respectively. The facts show that mark-up rates more or less fluctuate procyclically and these five different mark-up rates move in parallel. We also find a strong similarity among the countries compared in the mark-up rate level, in particular, definition (5).

Then we try to make an OLS regression analysis on the mark-up rates (of definitions (1) and (2)) to test our theoretical reasoning. The regression results confirm the facts: procyclical fluctuations and the parallel movement of the mark-up rates. We need to explain the strong similarity in the mark-up rate level and to set a mark-up rate function, which remains for our further research.

In the next section, we have the gist of my last paper to the extent that may relate to the treatment in this paper. In section 3, we calculate actual mark-up rates based on various definitions of the three countries

1) Surveying a large number of business enterprise's pricing procedures, Lee (1994, p. 310) classified into four broad categories.

compared, respectively. Then we make a regression analysis to test our theoretical reasoning in section 4. In the final section, we have some concluding remarks on mark-up rate fluctuations.

2. THE GIST OF THE PRECEDING PAPER[2)]

The following are some results in my last paper that may relate to the treatment in this paper.

Price Setting Equation and Real World

It is well known that Kaldor's (1955-56) model of income distribution was based on a full employment economy. One way of generalizing the model to allow for underemployment is to introduce a mark-up equation based on a Kalecki type Kaldorian model developed in Iyoda (1997).[3)]

The proposed price setting equation was (originally in my (1976)):

$$Y=(1+r)(W+D). \tag{1}$$

This equation means that entrepreneurs set a price by marking-up on wages (including salaries) plus depreciation at a *customary rate of* r.[4)]

2) Refer to the following in Iyoda (1999): Appendix A for Kalecki's price formation and the theory of income distribution (Kalecki 1965); footnotes 4 and 12 for Kalecki's degree of monopoly and the argument (Kalecki 1965, Robinson 1951, Harrod 1936, and Feiwel 1975); footnotes 6 and 9 for mark-up pricing based on costing procedures (Lee 1994, 1995). Kalecki (1965) 'Ch. 1 Costs and Prices' is a final version excerpted from his earlier chapter in (1943) and 'Ch.2 Distribution of National Income' was presented in a rather imperfect form in his paper (1938).

Lucas (1999, p. 34) mentions that "Much concern has been expressed in the management accounting literature in recent years about the use of full costs in pricing and output decisions." He refers, among others, to Shim & Sudit (1995) for the US and Drury, *et al.* (1993) for the UK.

3) See Iyoda (1997, Ch. 4) for the complete model, or alternatively Iyoda and Matthews (1999).

4) Kalecki (1965, p. 18) himself differentiates his theory from the so called full-cost theory, on the grounds that "The degree of monopoly may, but need not necessarily, increase as a result of a rise in overheads in relation to prime costs," and stresses "the emphasis on the influence of prices of other firms." Our analysis is not made on an industry but on the whole economy. Equation (1) is based on Kalecki's idea or "the 'full cost' principle" (Hall & Hitch, 1939, p. 12), but this is not the same with each of their original ideas.

When applying this simple equation to reality, we considered three questions: redefining r in the gross terms, and both the government and the external factors.

After considering these questions, we had a final price setting equation:

(1a2) $$Y = W + r(W + D) + P_o + T$$

where Y = output (GNP), W = wages (and salaries),
r = mark-up rate, D = depreciation,
P_o = net property income from overseas (external profits),
T = indirect taxes less subsidies, and
r, D are in the gross terms.

Net wage income from overseas, W_o, has been negligible in Japan, the US and the UK. We do not deal with this as a separate part, considering that W includes W_o. For convenience we take the same equation numbers as those in my (1999).

Aggregated Prices

A modern economy is a mixture of competitive market and non-competitive and restricted markets, which means that the pricing rule is not unique. In this regard, we consider the market for goods and services supplied by both the private and the public sectors. The private sector market is broadly divided into two categories. In the case of an oligopolistic market, we assume a mark-up pricing based on normal average total costs.

In the case of a competitive market, we assume a demand-determined price. This is not a mark-up price, but for our analytical purpose we consider a pseudo mark-up rate in this sub-market. An upturn in the business cycle is under the firm (strong) market, so it may be possible to assume that the pseudo mark-up rate is increasing; *vice versa* in the recession. With the public sector, the price of goods and services produced lies in-between the competitive and the oligopolistic prices. A government controlled price is considered to be similar to an oligopolistic type (that is a cost-determined price).

We considered that an actual price in the model was a mixture of these prices. The final equation of a whole product consisting of these three sub-markets was written as:

(1a8)
$$Y = \Sigma Y_i + P_o$$
$$\approx \Sigma \{ r_i^*(W_i + D_i) + W_i + T_i \} + P_o$$

where $i = 1, 3$ (1=oligopolistic market, 2=competitive market, 3=restricted market),

r_1^*, r_3^*=mark-up rate based on full cost pricing, and

r_2^*=mean value of the pseudo mark-up rate.

In Kalecki's context, material cost, M, was included; after an argument, however, we neglected this factor (see my (1999) for the reason). We considered our equation (1a2) as a proxy for this (1a8).

Our theoretical reasoning on the mark-up rate movement was as follows. Firstly, we assume that (1) r_1^* is a mark-up rate based on our full cost pricing that is calculated at the normal rate of capacity operation and (2) does not change frequently.[5] However, the actual mark-up rate, r_1, fluctuates reflecting the operating rate of capacity and the change of demand in the real world. If the rate of capacity operation is above the normal rate, the actual mark-up rate (r_1) would be higher than r_1^*. In an underemployment economy, the rate of increase in capacity operation causes productivity to increase or unit cost to decrease. On the other hand, if the rate of capacity operation is below the normal rate, the actual mark-up rate would be lower than r_1^*. Therefore an upturn in the business cycle has an increasing r_1, and *vice versa* in a recession. This suggests a procyclical movement of the estimated mark-up rate.

The similar reasoning is true of the relationship between r_3^* and r_3 (the mark-up rate in the restricted market). We consider that the actual value of the pseudo mark-up rate, r_2, also moves in a similar manner to r_1 in the business cycle. Therefore we concluded that the mark-up rate in the broad measure moved procyclically. See Iyoda (1999) for details.

5) See footnotes 6 and 9 in my (1999) for the literature supporting these assumptions (Lee (1994, 1995)).

3. Actual Mark-up Rates

We now calculate actual mark-up rates based on various definitions during the period from 1970 to 1998 for Japan, the United States, and from 1970 to 1996 for the United Kingdom.

Figures 1a-1c show five kinds of mark-up rates of each country, respectively. By observation, we find some common features of the countries compared. First, in Figures 1a-1c, actual mark-up rates fluctuate in the business cycle and are likely to move procyclically. Second, these five different definitions move more or less in parallel (except for the United Kingdom in early 1970s). This means that the selection of definition in this case does not seem to make any large difference in the direction of change in the mark-up rate. The mark-up rate difference in level is mostly caused by indirect taxes less subsidies (T) and/or depreciation (D).

Table 1 presents averaged mark-up rates of the whole period (Japan's rates for 1974-98) and their differences among the countries. In Table 1, we observe a surprisingly interesting feature. The mark-up rates (5) show a strong similarity among the three countries (see underlined values). By observing the definition, it turns out that most of the differences in the mark-up rates among these countries are caused by the difference of T, D or both of these. Two kinds of mark-up rates are shown in Figure 1d. Each group seems to fluctuate around a certain level, reflecting the business cycle in each country. The group level in mark-up rates (3) is higher than that in mark-up rates (5), which reflects the difference of depreciation. Table 1 also presents another type of the mark-up rate (5a), in which the difference between (5) and (5a) is only in denominator.[6)]

Our analysis is not on a particular industry but on the whole economy. The relationship shown by figure may be fundamental but vague. An econometric analysis will be helpful to see more clear-cut relationship between the business cycle and the mark-up rate fluctuations.

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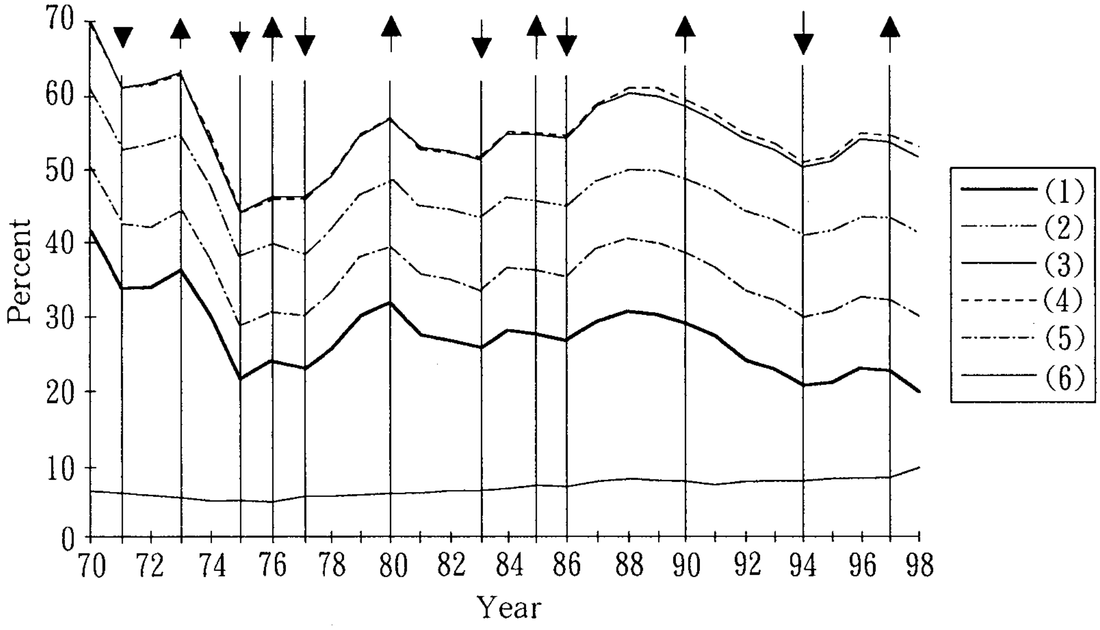
6) See Appendix A for this.

Figure 1a Mark-up rates based on different definitions, Japan 1970 to 1998



Note: Trough and peak years in the Japanese business cycle are shown by considering the Composite Indexes and "the Reference Dates of Business Cycle." See Appendix A for more arguments on this question. Trough and peak years are shown by inverted triangle and triangle symbols, respectively. Turning point quarters are given in parentheses.

Trough years		Peak years	
	1971 (QIV)		1973 (QIV)
	1975 (QI)		1976 (1977QI)
	1977 (QIV)		1980 (QI)
	1983 (QI)		1985 (QII)
	1986 (QIV)		1990 (1991QI)
	1994 (1993QIV)		1997 (QI)

Definition: (1) = {P_d(domestic profits) − T(indirect taxes less subsidies) − D(depreciation) + Adj(stock valuation adjustment less statistical discrepancies)} / {W (wages) + D}

(2) = $(P_d - T + Adj)/(W + D)$

(3) = $(P_d + Adj)/(W + D)$

(4) = $(P + Adj)/(W + D)$

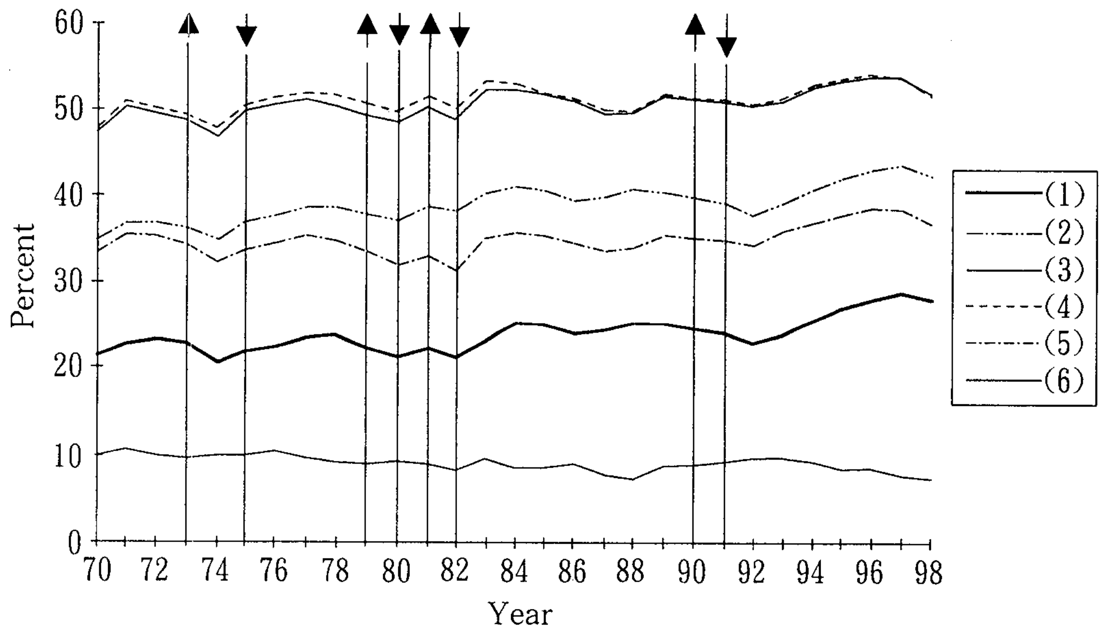
(5) = $(P_d - D + Adj)/(W + D)$

(6) = $T/(W + P_d - T + Adj)$, where $GDP + W + P_d$.

Profits, P, are here defined in the gross terms as $P \equiv P_d + P_o$. In the above definition we used P that included T.

Source: See the data section in Appendix B.

Figure 1b　Mark-up rates based on different definitions, United States 1970 to 1998



Note: Turning point years are decided by considering both the reference dates of business cycle (shown in *Survey of Current Business*, US Department of Commerce) and the cyclical indicator (coincident, yearly). Inverted triangle and triangle symbols represent trough and peak years, respectively. Turning point quarters are given in parentheses.

Trough years		Peak years	
			1973 (QIV)
	1975 (QI)		1979 (1980QI)
	1980 (QIII)		1981 (QIII)
	1982 (QIV)		1990 (QIII)
	1991 (QI)		

The definition of mark-up rates is the same as that of Japan; however, there is no adjustment factor for the United States.

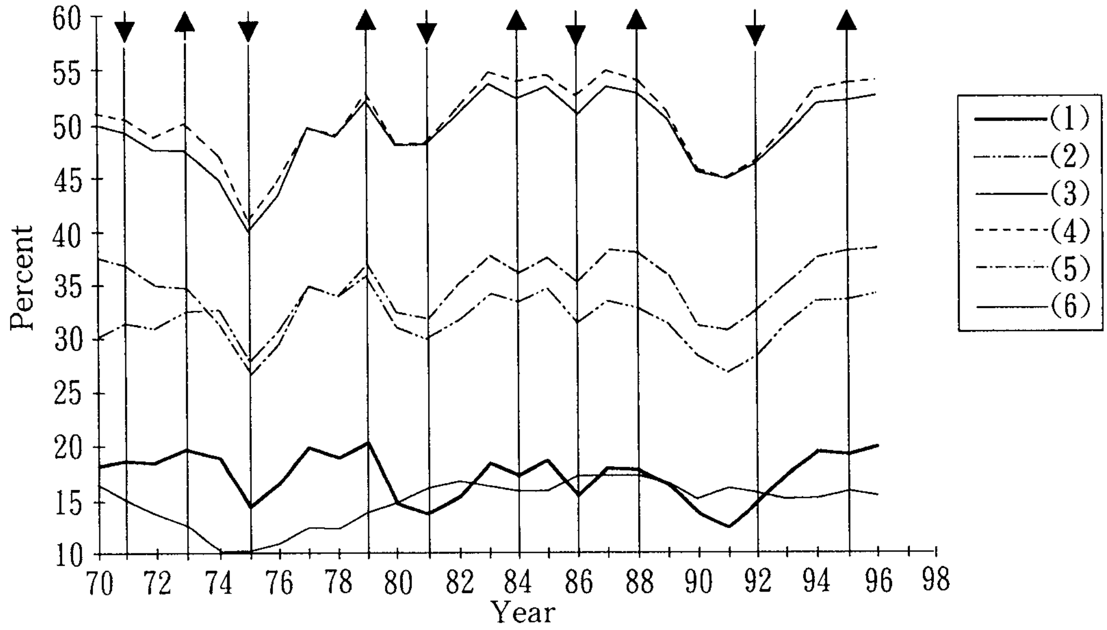
Sources: See the data section in Appendix B.

4. OLS Regression on Mark-up Rates

Here we try to make a regression analysis to test our theoretical reasoning in the real world. We have OLS regression on the mark-up rate of three countries. The sample period is 1971-98 for Japan and the United States, and 1971-96 for the United Kingdom.[7] We take the first

7) *United Kingdom National Accounts* has adopted the European System of Accounts 1995 (ESA95) since 1998 edition. Hence we have difficulty to obtain necessary adjusted data for the sample years from 1970 through 1998.

Figure 1c Mark-up rates based on different definitions, United Kingdom, 1970 to 1996



Note: Some *National Accounts* data have difficulty to keep continuity to the new system. The figure coverage here was restricted to 1996. The turning point years are simply shown according to the cyclical indicator (coincident, yearly). The definition of mark-up rates is the same as that of Japan. Adjustment for the United Kingdom is '*SA* (Stock Appreciation) less *SD* (Statistical Discrepancies).'

Sources: See the data section in Appendix B.

two mark-up rates (definitions (1) and (2)) in regression that are defined in a note to Figure 1a or shown in Table 1.

Tables 2a and 2b show some good fit results of regression, between which the former results are slightly better than the latter results. By observation, mark-up rates in these examples are explained by all or some of the following variables: cyclical indicator, operating rate of capacity, productivity, and the preceding mark-up rate itself.[8] As far as our trials in regression were concerned, the results concerning other variables were not always good. We also tried to make regression in the same variable combination to see the possibility of forming the same

8) See Appendix B for data source. For the United Kingdom, the operation rate index is not available.

TABLE 1

AVERAGED MARK-UP RATE AND THE DIFFERENCE: JAPAN, UNITED STATES, AND UNITED KINGDOM

Mark-up rate (defined)	Japan (1974-98)	US (1970-98)	UK (1970-76)	JP-US	JP-UK	US-UK
	Averages			*Differences*		
(1) $(P_d - T - D + Adj)/(W+D)$	25.89	23.97	17.36	1.92	8.53	6.61
(2) $(P_d - T + Adj)/(W+D)$	44.87	39.31	31.87	5.56	13.00	7.44
(3) $(P_d + Adj)/(W+D)$	53.68	50.54	49.24	3.14	4.44	1.30
(4) $(P + Adj)/(W+D)$	54.27	51.38	50.36	2.89	3.91	1.02
(5) $(P_d - D + Adj)/(W+D)$	*34.70*	*35.20*	*34.73*	*−0.50*	*−0.03*	*0.47*
Ref. (5) Japan (1970-98)	36.10			0.90	1.33	
(3a) $(P_d + Adj)/W$	66.33	59.71	57.64	6.62	8.69	2.07
(5a) $(P_d - D + Adj)/W$	42.84	41.58	40.64	1.26	2.20	0.94
(6a) $T/(W+D)$	8.80	11.23	17.37	−2.43	−8.57	−6.14
(7) $D/(W+D)$	18.98	15.34	14.52	3.64	4.46	0.82

Note: Mark-up rates are averaged during the whole sample period except for Japan. The mark-up rate of Japan for 1970-73 is excluded, for the values of these years are greatly high compared with other years.

Figure 1d Mark-up rate similarity, Japan, United States, and United Kingdom

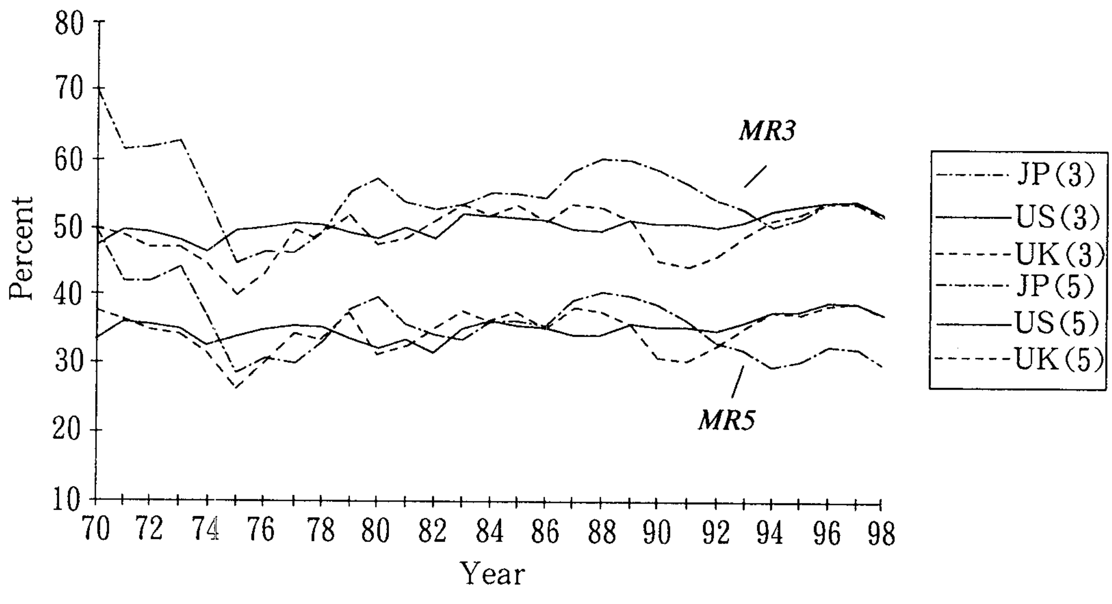


TABLE 2a

OLS REGRESSION RESULTS ON MARK-UP RATES

	Japan (1971-98)		*United States* (1971-98)		*United Kingdom* (1971-96)	
	MR1	MR2	MR1	MR2	MR1	MR2
Constant	−42.896	−35.249	19.776	38.417	−58.282	−51.186
	(−7.31)	(−5.11)	(4.23)	(5.77)	(−2.55)*	(−2.08)*
CI (cyclical indicator)	0.051	0.084	0.585	0.566		
	(2.59)*	(3.86)	(5.24)	(4.76)		
CI (−1)			−0.538	−0.502	0.133	0.122
			(−4.80)	(−4.38)	(4.81)	(4.12)
OR (operation rate)			−0.144	−0.223		
			(−2.36)*	(−4.00)		
ORg (% growth)						
PR (productivity)	0.454	0.420			0.554	0.595
	(8.46)	(7.08)			(2.43)*	(2.47)*
PRg (% growth)						
PRg (−1)						
MR (−1)	0.689	0.659	0.444	0.314	0.388	0.354
	(12.51)	(11.37)	(2.82)	(2.10)*	(2.62)*	(2.17)*
$\bar{R}^2$	0.8992	0.8748	0.8575	0.8684	0.8564	0.8165
DW	1.7324	1.6769	1.9724	2.0747	1.9760	1.8475
Durbin's h	0.6603	0.8813	−0.5618	−0.5980	0.0263	0.6534

Note: MR1 and *MR2* mean the mark-up rate of definitions (1) and (2), respectively. See the note to Figure 1a for the detail. *CI* (cyclical indicator) is coincident and yearly. *OR* (operation rate of capacity) is manufacturing industry for both Japan and the United States. *ORg* is the percentage change in the operation rate. *PR* (productivity) is an adjusted index (excluding the trend); manufacturing for Japan, nonfarm business sector (output per hour of all persons) for the United States, and whole economy (output per filled jobs) for the United Kingdom. *PRg* (productivity growth in %) is calculated from this adjusted index.

$\bar{R}^2$ is adjusted R-squared. Values in parentheses are t-values. ** refer to 90% significance, and * refers to 95% significance. The others (without star) refer to 99% significance.

TABLE 2b

OLS Regression Results on Mark-up Rates

	Japan (1971-98)		*United States (1971-98)*		*United Kingdom (1971-96)*	
	MR1	MR2	MR1	MR2	MR1	MR2
Constant	3.484	7.824	6.038	15.105	11.598	24.891
	(1.91)**	(2.36)*	(2.46)*	(3.08)	(4.48)	(9.27)
CI (cyclical indicator)			0.063	0.063	0.056	0.070
			(3.29)	(2.80)	(2.11)*	(2.56)*
CI (−1)						
OR (operation rate)						
ORg (% growth)	0.459	0.464				
	(7.44)	(6.67)				
PR (productivity)						
PRg (% growth)			0.414	0.314		
			(3.74)	(2.72)*		
PRg (−1)					−0.107	−0.084
					(−5.06)	(−3.82)
MR (−1)	0.857	0.824	0.522	0.480		
	(13.10)	(11.58)	(3.40)	(2.89)		
$\bar{R}^2$	0.8700	0.8371	0.8258	0.8137	0.8487	0.8136
DW	1.7370	1.5550	1.6711	1.5068	1.4378	1.5069
Durbin's h	0.4642	1.0417	0.8809	1.3233		

Note: See Table 2a. For the United States in this table, using *CI(-1)* instead of *CI* only made a slight difference in the regression result on *MR1* and *MR2*, respectively.

function among the three countries. The results were poor. Some combination between two countries may be applicable, but the third country's results (on both *MR1* and *MR2* or one of these) are fairly poor compared with the results in Tables 2a and 2b, and *vice versa* for the others.

In the preceding section, we observed that: (1) the actual mark-up rates fluctuated in the business cycle, and all our defined mark-up rates moved more or less in parallel in each country (except for the United Kingdom in early 1970s). We now make some remarks on the regression results. First (observation), by regression it turned out that various variables related to the fluctuations and important variables, among others, were cyclical indicator, operating rate of capacity, productivity, and the preceding mark-up rate itself. The parallel movements in the mark-up rates of *MR1* and *MR2* are also confirmed by the regression results. A set of the results on *MR1* and *MR2* in each country is mostly similar, and the greater difference is found in the constant term.

Second (interpretation), the regression results show the possibility of explaining the mark-up rate fluctuations in the real world. They support the procyclical fluctuations. The mark-up rates move to the same direction of the following variables: cyclical indicator, operating rate of capacity, and productivity. Our model suggested that, reflecting the operating rate of capacity and the change of demand, the mark-up rates were likely to move procyclically. The cyclical indicator reflects the operating rate of capacity and the change of demand, and could be a partial substitute for these. Productivity index (trend eliminated) moves procyclically in the business cycle and naturally relates to cyclical indicator, operating rate of capacity, and the change of demand.

Third (suggestion), our regression results will give a helpful suggestion for making a mark-up rate function, but it may not be easy to set the unique function for comparative studies, in particular a multi-country comparison. Economic factors are more or less common and similar among advanced capitalist countries, but each country has its own economic structure, institutions (including taxation system), entrepreneurs' history, etc., which may affect economic variables. Despite all these circumstances, our mark-up rate (5) showed a greater similarity among the three countries compared. Research on this question is worth doing, and formulating a mark-up rate function will be demanded.[9] We

9) Iyoda and Matthews (1999) presented the following mark-up rate function

leave these questions for future work.

5. Conclusion

An actual mark-up rate on the macro-economic base seems to be fluctuating. To explain this fluctuation theoretically, we presented an aggregated price by market type; competitive, oligopolistic, and restricted markets. These prices were explained by mark-up rate in one way or another, arguing on the movement of these mark-up rates in the business cycle in my last paper. To see the fact, we here calculated various mark-up rates based on our definition, then tested our theoretical reasoning by OLS regression analysis.

Our concluding remarks are:
First (theory), our model explains that, reflecting the operating rate of capacity and the change of demand, the mark-up rates are likely to move procyclically. Second (facts), actual mark-up rates fluctuate and the movements are more or less procyclical; surprisingly strong similarity is found in the mark-up rate level particularly definition (5). Third (test), the regression results confirmed the procyclical movements of the mark-up rate. Fourth (future perspective), this may give some hint to clear up the long-pending question (since Kalecki and Harrod) whether the degree of monopoly (the mark-up rate in our context) fluctuates procyclically or counter-cyclically.

Finally we should remark on two things. First is the conditions that may discount, to some extent, our concluding remarks: this analysis is on a macro-base, and of three advanced countries for the period from 1970 to 1998. Second (future work), we need to explain our finding of the strong similarity in the mark-up rate level, which remains for a topic for future research, as well as formulating a mark-up rate function.

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for Japan between 1971 and 1994;

$$r = a + b(Y/Y^*)$$

where Y^*=capacity *GNP*. They used the operating rate in manufacturing industries as a proxy for the whole economy, obtaining the capacity *GNP*, Y^* by $Y^* = Y/O_r$ where O_r=operating rate in manufacturing industries. They had significant results: t-values of a and b were -4.500 and 11.602, respectively and $\bar{R}$ -squared was 0.8477.

APPENDIX

A. Cyclical Indicators and Mark-up Rates, Japan, United States, United Kingdom

Cyclical Indicators or Diffusion Index

Annual rather than quarterly data are used in this paper because an annual base seems to be more suitable for seeing fundamental changes; quarterly data are more affected by noise elements. For a finer analysis, however, it may be necessary to use quarterly data.

Turning point years may be decided by considering "the Reference Dates of Business Cycle" and the Composite Indexes. Most of the turning point quarters shown by the reference dates coincide with the turning point years. They sometimes do not coincide each other. Furthermore they may have some difficult case to decide the real turning point year; because the cyclical indicators are composed of a fairly large number of the group of economic time series that are influenced by the change of economic structure. Figure 2 shows cyclical indicators or the diffusion index of Japan, the United States, and the United Kingdom (coincident, yearly).

Another Mark-up Rates

In Table 1, we have another type of mark-up rates (3a, 5a) that are simply calculated by W as denominator, and are shown in Figure 1e. The mark-up rate (5a) of each country also seems to fluctuate around a certain level in the business cycle, and the differences among the countries are fairly small. However, these differences are greater in (5a) than in (5). In an attempt to discuss the similarity in the mark-up rate level, the mark-up rate (5a) could be one of the less satisfactory substitutes for our (5). This becomes more difficult in the case of (3a), for mark-up rate differences among the countries compared are far larger in the gross terms.

B. Data

(1) *Japan*

DATA SOURCE ABBREVIATION

ANA *Annual Report on National Accounts*, Economic Planning Agency (EPA).

ABCI *Annual Report on Business Cycle Indicators*, EPA (and http://www.epa.go.jp).

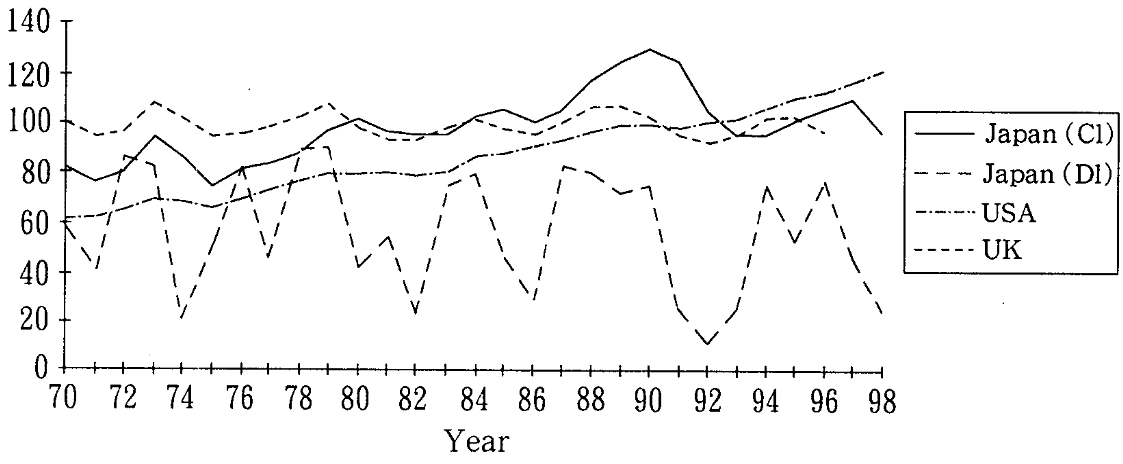
CEFS *Comparative Economic and Financial Statistics: Japan and other Major Countries*, Research and Statistics Department, The Bank of Japan.

DS *Datastream* (as of 24 August 1999).

KY *Keizai Youran [Handbook of Economic Statistics]*, EPA.

GCS *Gross Capital Stock of Private Enterprises*, Department of National

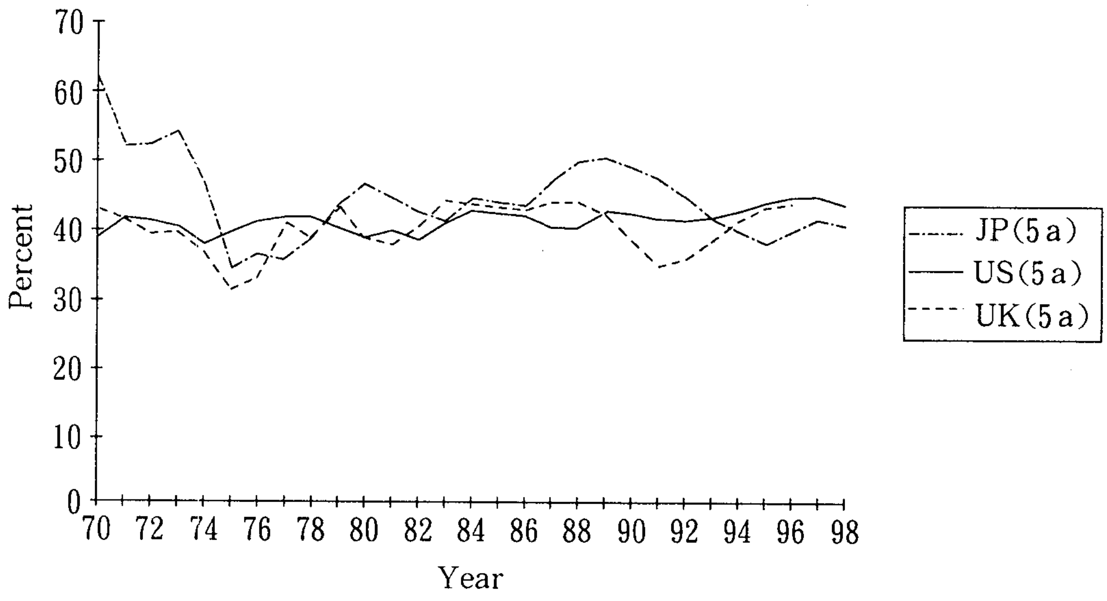
Figure 2 Cyclical indicators or diffusion index, Japan, United States, United Kingdom, 1970 to 1998 (coincident, yearly)



Note: The Composite Index of Japan for 1970-73 is adjusted for the current series of index by the present writer.

Sources: See the data section in Appendix B.

Figure 1e Mark-up rate similarity, Japan, United States, and United Kingdom



Accounts, Economic Research Institute, EPA.

HSJ *Historical Statistics of Japan,* Vol. 1, Japan Statistical Association, 1987.

JSY *Japan Statistical Yearbook,* Statistic Bureau, Management and Coordination Agency.

RNA *Report on Revised National Accounts,* EPA.

NEAQ *National Economic Accounts Quarterly,* Economic Research Institute, EPA.

DATA

CI (cyclical indicator, composite index):

ABCI 1993 and EPA home page (coincident) for 1970-98.

DI (diffusion index):

DS (JPCOININ, coincident) for 1970-98.

GNP and *GDP* both at market prices:

ANA 1999, Part 1, [2], IV, 1 for 1970-96 and *ANA* 2000 for 1997-98.

IE (income from employment), *IS* (income from the self-employed), *PI* (profits of incorporated enterprises), and *T* (indirect taxes less subsidies):

ANA 1999, Part 1, [2], IV, 2 for 1970-95 and *ANA* 2000 for 96-98.

D(depreciation), P_o (net property income from overseas), and W_o (net wage income from overseas):

RNA 1986 (on the basis of 1980), Vol. 1, Part 1, [2], I, 1 for 1970-79.

RNA 1996 (on the basis of 1990), Part 1, [2], I, 1 for 1980-84.

ANA 2000, Part 1, [2], I, 1 for 1985-98.

Adj (*SVA* (stock valuation adjustment) and *SD* (statistical discrepancies)):

(stock valuation adjustment)

RNA 1986 (on the basis of 1980), Vol. 2, Part 4, [3], T18 for 1970-77.

RNA 1996 (on the basis of 1990), Part 1, [3], T18 for 1978-92.

ANA 2000, Part 1, [3], T18 for 1993-98.

(statistical discrepancies)

ANA 1999, Part 1, [2], IV, 3 for 1970-96 and *ANA* 2000 for 1997-98.

GCS (gross capital stock, progress base):

GCS 1998, T1(1) for 1970-96.

NEAQ 1999(2), No. 121, T1(1) for 1997-98.

LIS (labour income from the self-employed):

LIS is imputed by the formula,

$LIS = IS - PI \times$ (*GCS* ratio of unincorporated to incorporated enterprises).

PR (productivity in manufacturing industry, 1990=100, trend eliminated):

JSY 1995, T3-43 for 1970, 1975-92; *JSY* 1998, T3-42 for 1993-98.

Index numbers for 1969, 1971-74 are calculated from those of 1980=100 (*HSJ*, T 3-26); Index numbers for 1997-98 from those of 1995=100 (*KY* 1999, pp. 84-85).

(2) *United States*

DATA SOURCE ABBREVIATION

DS *Datastream* (as of 24 August 1999).

ERP *Economic Report of the President,* Council of Economic Advisors.

SCB *Survey of Current Business,* Bureau of Economic Analysis of the US Department of Commerce.

DATA

CI (cyclical indicator):

DS (USCOININ, The Conference Board, coincident) for 1970-98.

GNP *DS* (USGNP...B) for 1970-98.

GDP *DS* (USGDP...B) for 1970-98.

IE *DS* (USCOMEMPB, compensation of employees) for 1970-98.

IS *DS*(USPIFARMB, proprietor's income with *IVA* and *CC* adjusted—farm) and *DS* (USPINFRMB, above—nonfarm) for 1970-98.

CP *DS* (USCPICTOB, corporate profits with *IVA* and *CC* adjusted) for 1970-98.

P_o *DS* (USIVIBALB, balance on investment income) for 1970-98.

W_o (balance on compensation of employees):

W_o is obtained by the formula,

$W_o = GNP - GDP - P_o$.

D (depreciation), and *T* (indirect taxes less subsidies):

ERP 1999, TB-26 for 1970-97.

CEFS 1999, T3 for *D* (1998) (see the Japan section for *CEFS*).

ERP 1999, TB-26 for *T* (1998) (an estimated value, provisional).

NCS (net capital stock):

SCB 1992(1), T6 for 1970-84 (adjusted by 3 year average for 1985-87 of (Value in 1997(5), T7)/(Value in 1992(1), T6).

SCB 1997(5), T7 for 1985-86.

SCB 1998(9), T7 for 1987-97.

NCS = Current-Cost Net Stock of Fixed Nonregidential Private Capital (equipment and structure).

LIS (labour income from the self-employed):

LIS is imputed by the formula,

$LIS = IS - CP \times$ (*NCS* ratio of unincorporated to incorporated enterprises)

where *NCS* ratio = *NCS* of noncorporate/*NCS* of corporate. (*NCS* ratio for 1998, assumed the 1997's value).

PRg (productivity growth in %, 1992=100, trend eliminated):

Calculated from 'Output per hour of all persons (Nonfarm business sector)'

(*ERP*1999, TB-49 for 1970-98; average of QII and QIII for 1998).

(3) *United Kingdom*

DATA SOURCE ABBREVIATION

DS *Datastream* (as of 24 August 1999).

ETA *National Accounts and Expenditure*, Central Statistical Office (CSO).

ETAS *Economic Trends: Annual Supplement*, CSO.

NA *United Kingdom National Accounts*, CSO.

DATA

CI (cyclical indicator):

DS (UKCOININ, coincident) for 1970-96.

GNP and *GDP* both at market prices, *T* (taxes on expenditure less subsidies), and P_o (net property income from abroad):

*ETAS*1997, T1.2 for 1970-96.

W_o (balance on compensation of employees—net wage income from overseas):

*ETAS*1999, T1.17 for 1970-96 (not consistent with *ETAS* 1997, T1.17).

IE (income from employment), and *SA* (stock appreciation):

*ETAS*1997, T1.4 for 1970-96.

IS (income from the self-employed), and *GTP* (gross trading profits):

NA 1992, T1.3 for 1970.

NA 1993, T1.4 for 1971-74.

NA 1997, T1.4 for 1975-96.

D (depreciation):

NA 1992, T1.1 for 1970.

NA 1993, T1.1 for 1971-74.

NA 1997, T1.1 for 1975-96.

SD (statistical discrepancies, income adjustment):

NA 1993, T1.4 for 1970-74.

NA 1997, T1.5 for 1975-96.

NCS (net capital stock):

*NAE*1981, T1.11 for 1970-73.

NA 1985, T11.7 for 1974-81.

NA 1993, T14.7 for 1982-85.

NA 1997, T14.7 for 1986-96.

NCS=All Fixed Assets−Dwellings.

LIS (labour income from the self-employed):

LIS is imputed by the formula,

LIS=*IS*−*GTP*× (*NCS* ratio of unincorporated to incorporated enterprises) where *NCS* ratio = NCS of personal sector/*NCS* of (industrial and commercial companies + financial companies and institutions).

PR (productivity, 1995 = 100, trend eliminated) and *PRg* (productivity growth in %, trend eliminated):

Calculated from 'Output per filled job (whole economy)' (*ETAS* 1999, T38 for 1970-98).

References

Note: An asterisk (*) after title indicates in Japanese.

Drury, M., S. Braund, P. Osborne, and M. Tayles, *A Survey of Management Accounting Practices in UK Manufacturing Companies*, ACCA Publications, London, 1993.

Feiwel, G. R., *The Intellectual Capital of Michal Kalecki: A Study in Economic Theory and Policy*, The University of Tennessee Press, Knoxville, 1975.

Hall, R. L. and C. J. Hitch, Price Theory and Business Behaviour, *Oxford Economic Papers*, No. 2, 12-45, 1939.

Harrod, R. F., *The Trade Cycle: An Essay*, The Clarendon Press, Oxford, 1936.

Iyoda, M., An Application of Kaldorian Model of Income Distribution to an Underemployment Economy (1),* *Economic and Business Review* (St. Andrew's University, Osaka), 18 (2), 1-12, 1976.

———, An Application of Kaldorian Model of Income Distribution to an Underemployment Economy (2): A Two Sector Model,* *Economic and Business Review* (same as above), 20 (2), 1-14, 1978.

———, *Profits, Wages, and Productivity in the Business Cycle: A Kaldorian Analysis*, Kluwer Academic Publishers, Boston, 1997 (originally presented as the author's doctoral thesis—University of Buckingham, 1994).

———, Mark-up Rate Fluctuations in the Business Cycle: A Kaleckian View, *Bulletin of the Research Institute* (St. Andrew's University, Osaka), 25 (1), 37-48, 1999.

Iyoda, M. and K. Matthews, The Business Cycle in the Japanese Economy 1971-94: A Kaleckian View, Wincott Discussion Papers (University of Buckingham), 01/99, 1-28, 1999 (originally submitted for the 25th General Conference of the International Association for Research in Income and Wealth (Cambridge, England 23-29 August 1998), then issued as this form with correction and improvement, in particular Section 4).

Kaldor, N., Alternative Theories of Distribution, *Review of Economic Studies*, 23 (2), 83-100, 1955-56. Reprinted in N. Kaldor, *Essays on Value and Distribution*, 209-236, 1960, Gerald Duckworth & Co. Ltd, London.

Kalecki, M., The Determinants of the Distribution of the National Income, *Econometrica*, 6, 97-112, (April) 1938.

———, Costs and Prices in *Studies in Economic Dynamics*, George Allen and Unwin, London, 1943.

———, *Theory of Economic Dynamics: An Essay on Cyclical and Long-run Changes in Capitalist Economy*, G. Allen & Unwin, London, 1954 (page references are from *4th ed.*, Unwin University Books, London, 1965).

Lee, F. S., From Post-Keynesian to Historical Price Theory, Part 1: Facts, Theory and Empirically Grounded Pricing Model, *Review of Political Economy*, 6(3), 303-336, 1994.

———, Part II (of Lee 1994), *Review of Political Economy*, 7(1), 72-124, 1995.

Lucas, M., The Pricing Decision: economists versus accountants, *Management Accounting* (CIMA, UK), 77(6), 34-35, 1999.

Robinson, J., The Trade Cycle, *Economic Journal*, 184, 691-693, 1936. Reprinted in J. Robinson, *Collected Economic Papers*, Vol. 1, 59-61, Basil Blackwell, Oxford, 1951 (page references are to the latter).

Shim, E. and E. F. Sudit, How Manufacturers Price Products, *Management Accounting* (IMA, USA), 76(8), 37-39, 1995.

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